

## The Genus *Timema* Scudder, with the Description of a New Species, (Orthoptera, Phasmidae, Timeminae.)

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The genus *Timema* was described by Scudder in 1895.<sup>1</sup> based on a single species, *californicum*, from California. In 1903, Caudell furnished the first detailed description of the species, which had been sent him by Scudder, and proposed the subfamily name Timeminae, the subfamily being restricted to this single genus. He also discussed and figured material from Los Angeles County, California, the differences found being noted as possibly showing the presence of a distinct species, but the material at hand was considered in too poor a state of preservation to warrant description.

From the larger series now available, we find the southern Californian insect to be a distinct species, differing very strikingly in constant features of the genitalia.

The genus *Timema* was said to be closely allied to *Agathemera* by Scudder and characterized as "maxime affine" by Redtenbacher,<sup>2</sup> the latter ignoring Caudell's subfamily Timeminae.

Considering the complete median segment, which is in no way more closely attached to the metanotum than to the succeeding tergite; the three jointed tarsi, and the limbs so attached ventrad that the coxae can not be seen from above, we believe that the subfamily Timeminae is valid. In fact it may be characterized as the most aberrant subfamily from the conventional Phasmid type.

The genus does find nearest affinity with *Agathemera*, though the relationship is decidedly remote.<sup>3</sup> In addition to the features given above, *Timema* is distinguished by both sexes being completely apterous, the tarsal claws are slightly

<sup>1</sup>Can. Ent., XXVII, p. 30.

<sup>2</sup>Insektenfam. Phasmiden, p. 88, (1908).

<sup>3</sup>Comparison is made with more than one species of *Agathemera* in the collection of the Academy of Natural Sciences of Philadelphia.

asymmetrical and the large arolium is produced as far as the apex of the longer tarsal claw. The species of *Timema* are furthermore much smaller than those of *Agathemera*.

***Timema californicum* Scudder**

1895. *Timema californicum* Scudder, Can. Ent., XXVII, p. 30. [Santa Cruz, California.]

1903. *Timema californicum* Caudell, Proc. U. S. Nat. Mus., XXVI, p. 883, pl. LVII, fig. 5, pl. LVIII, fig. 7. (In part.) [♂, ♀; Santa Cruz Mountains, California.]

1903. *Timema californica* Caudell, Ent. News, XIV, p. 316. [[juv.] ♀; Humboldt County, California.]

1908. *Timema californicum* Redtenbacher, Insektenfam. Phasmiden, p. 88. (No additional material.)

1913. *Timema californica* Caudell, Proc. U. S. Nat. Mus. XLIV, p. 613. (No additional material.)

The species is best discussed by Caudell in his first paper in 1903, the detail figures there given being, however, very poor.

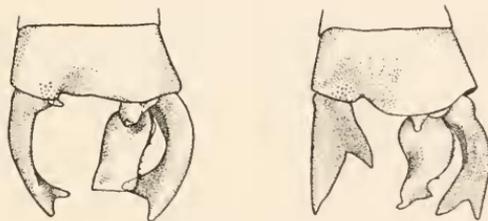


Fig. 1. *Timema californicum* Scudder. Mount Tamalpais, California, Male. Dorsal view of distal portion of abdomen. (Much enlarged.)

Fig. 2. *Timema chumash* new species. Los Angeles County, California. Male. Type. Dorsal view of distal portion of abdomen. (Much enlarged.)

Later that year Caudell gives all the data yet recorded as to the habits of this singular insect. According to that author, on June 9th to 16th, 1903, Mr. H. S. Barber beat nineteen females from fir trees (at Bair's Ranch on Redwood Creek) in Humboldt County, California, at an elevation of about 1400 feet. The individuals were reported to be green like the fir needles, which they resembled so closely as to be scarcely discernable as long as they remained motionless, which they did for some time after having been beaten into the net. All were taken from the lower branches of a clump

of large trees, which stood somewhat apart from the denser woodland.

MEASUREMENTS IN MILLIMETERS

|                          | Length of<br>body | Length of<br>pronotum | Width of<br>pronotum | Length of<br>caudal tibia |
|--------------------------|-------------------|-----------------------|----------------------|---------------------------|
| ♂                        |                   |                       |                      |                           |
| Mount Tamalpais, Cal.... | 12.5              | 1.9                   | 2.7                  | 3.4                       |
| Fairfax, Cal.....        | 14.5              | 1.9                   | 2.7                  | 3.8                       |
| Carmel, Cal.....         | 12.7              | 1.9                   | 2.7                  | 3.7                       |
| ♀                        |                   |                       |                      |                           |
| Guerneville, Cal.....    | 20.8              | 3.1                   | 4.                   | 6.                        |
| Fairfax, Cal.....        | 17.7              | 2.4                   | 3.4                  | 4.2                       |
| Oakland, Cal.....        | 19.8              | 2.6                   | 3.4                  | 4.7                       |

The male genitalia and female penultimate tergite and cerci are distinctive for the species. The former are shown by text figure 1, while under *T. chumash*, here described, other features characteristic of this species are discussed.

In males some variation in the form of the genitalia is found, though the type is constant, showing no divergence toward that developed in *chumash*. Thus the disto-internal production of the cerci varies individually from the type figured to one in which these portions are broader, this portion of the sinistral cercus in a male from Monterey County being distinctly broader than long with margin convex to the rather broadly rounded apex. Furthermore the sinistral cercus is produced proximad near the base, so that the internal margin beyond the basal tooth is developed into a distinct flange, while the meso-dextral elongate plate is much constricted mesad. These differences we believe are of no further importance than indicating the degree of variation to be expected in the male genitalia of the species.

In females the cerci are elongate, leaf-like, cochleate plates, obliquely truncate at their apices, with internal surfaces roughly denticulate toward the dorsal margin. The distal margin is smooth.

We are consequently not fully satisfied that the female from Kings River, in Fresno County, represents this species. Though agreeing with the others here recorded in the form of the penultimate tergite, the cerci show a broader and less

oblique distal truncation, as found in *chumash*, the margin being there moderately denticulate, about intermediate between the typical conditions found in *californicum* and *chumash*. The presence of a geographic race or distinct species in the southern Sierras is a possibility which additional material, including adult males, alone can determine.

Though we have consistently endeavored to secure material of this genus whenever working on the Pacific Coast, all efforts have been unsuccessful.<sup>4</sup>

The species is now known from Bair's Ranch on Redwood Creek in Humboldt County, California, southward along the coast as far as Carmel in Monterey County. It is also found in the Sierras, being here recorded from the vicinity of Lake Tahoe, in Eldorado County, and from Kings River, in Fresno County. As is true for many secretive species, the actual distribution of this insect is probably considerably more extensive than as at present defined.

*Specimens examined*, in addition to 6 previously recorded: 28; 8 males, 17 females, 3 immature individuals.

CALIFORNIA. Corralitos, Redwood, Santa Cruz Mountains, May 13, 1907, (J. C. Bradley), 1 juv. ♀, [Cornell Univ.]. Guerneville, Sonoma County, May 31, 1910, (E. C. Van Dyke), 1 ♀, [Hebard Cln.]. southern Sonoma County, August 31, 1910, (J. A. Kusche), 1 ♀, [Cal. Acad. Sci.]. Fairfax, Marin County, May 7, and 11, 1911 and 1919, (E. C. Van Dyke; E. P. Van Duzee), 4 ♂, 4 ♀, [Cal. Acad. Sci., and Hebard Cln.]. Mount Tamalpais, June 20, 1909, (E. C. Van Dyke), 1 ♂, [Cal. Acad. Sci.]. Niles Canyon, July 15, 1916, (E. P. Van Duzee), 1 ♀, [Cal. Acad. Sci.]. Oakland, May 14, 1911, (E. C. Van Dyke; hills back of city) 3 ♀; (C. D. Haines) 1 ♀, [Cal. Acad. Sci., and Hebard Cln.]. Corte Madero Creek, Palo Alto, April 4, 1915, (H. Morrison), 1 juv. ♀, [U. S. N. M.]. Carmel, Monterey County, May 19 and 21, 1911 and 1913, (E. C. Van Dyke), 2 ♂, 3 ♀, [Cal. Acad. Sci., and Hebard Cln.]. Monterey County, (M. K. Curran), 1 ♂, 2 ♀, [Hebard Cln.]. Fallen Leaf Lake, Lake Tahoe, Eldorado County, July 1, 1915, (E. C. Van Dyke). 1 juv. ♀, [Cal. Acad. Sci.]. Paradise Valley, Kings River, Fresno County, 6500 feet, July 23, 1910, (E. C. Van Dyke), 1 ♀, [Hebard Cln.].

<sup>4</sup>From the data at hand the species of *Timema* appear to be spring forms, reaching their greatest numerical abundance in May or June. Our Californian work has all been accomplished much later in the season, this probably in large part accounting for our failure to find the insects.

**Timema chumash**<sup>5</sup> new species

1903. *Timema californica* Caudell, (in part not of Scudder, 1895). Proc. U. S. Nat. Mus., XXVI, p. 883, pl. LVIII, fig. 7a. [♂, ♀, Los Angeles County, California.]

Males of the present species agree closely with those of *T. californicum* Scudder, except in the strikingly different genitalia. In the female sex the genitalia likewise show differences, which, however, are by no means as distinctive.

The insect occurs in the mountains and adjacent regions of southern California, far south of the known limits of distribution of *californicum*.

TYPE: ♂; Los Angeles County, California. [Hebard Collection, Type No. 533.]

Agrees closely with males of *californicum*, differing only in the more robust structure and in the following genitalic features.<sup>6</sup> Penultimate tergite produced dextro-distad more than sinistro-distad, in such a way that the dextral margin is slightly more oblique to a medio-longitudinal line than the sinistral margin; distal margin broadly convex to a small but rather decided concave emargination, situated sinistro-mesad before the base of the sinistral cercus, the brief portion of this margin above the sinistral cercus straight, transverse, the surface of the plate toward the internal portion of this section supplied with denticulations in a small oval area. Sinistral cercus broad lanceolate with apex acute, lacking a basal tooth but flattened proximo-internally, this portion with lateral margin diverging and produced into a large acute-angulate projection mesad, about half as large as the remaining distal portion of the shaft. Dextral cercus a heavy, evenly in-bowed shaft of equal length, bifid distad with internal portion of this section and larger than the external portion; shaft bulbous proximo-externally. This cercus is much more like the dextral cercus of *californicum*, differing principally in the bulbous proximo-external section. Adjacent to and sinistrad of the dextral cercus is a large, lamellate plate, extending caudad almost an equal distance, irregular in contour and strongly constricted meso-distad, the dextral margin of this plate being armed with well spaced, sharp, recurved teeth. Above this plate is a very small irregularly rotundato-conical projection.<sup>7</sup> Me-

<sup>5</sup>The Chumash were an Indian tribe which, at the time of the Spanish conquest, inhabited the region in which this species is found.

<sup>6</sup>Reference to text figure 2 is advisable, due to the high specialization of these parts.

<sup>7</sup>In *californicum* the homologous projection is larger, more bulbous, with apex produced dorsad in a small conical process, as shown in text figure 1.

sad, from beneath the penultimate tergite, project two small, irregular, rotundato-trigonal plates. These are sometimes concealed and apparently represent the supra-anal plate (tenth tergite, not counting the median segment, which, in the species of *Timema*, is of the same form as the first tergite). Subgenital plate scoop-shaped, with apex weakly obtuse-angulate emarginate.<sup>8</sup> Styles absent.

ALLOTYPE: ♀; Los Angeles County, California. June. (D. W. Coquillett.) [United States National Museum.]

Very similar to females of *californicum*, apparently differing only in genitalic features. Size considerably larger than in male. Penultimate tergite roundly produced mesad,<sup>9</sup> so that only the distal portion of the very small trigonal supra-anal plate is exposed. Cercus elongate, cochleate, very broadly truncate at apex, this truncation very weakly oblique and with margin strongly but irregularly dentate.

#### MEASUREMENTS IN MILLIMETERS

|  | Length of<br>body | Length of<br>pronotum | Width of<br>pronotum | Length of<br>caudal<br>tibia |
|--|-------------------|-----------------------|----------------------|------------------------------|
| ♂  |                   |                       |                      |                              |
| Los Angeles County, Cal. <i>Type</i> ...   | 14.               | 2.3                   | 3.3                  | 4.                           |
| Los Angeles County, Cal. <i>Paratype</i>   | 13.5              | 2.2                   | 3.                   | 4.2                          |
| Mount Wilson, Cal. <i>Paratype</i> ....    | 13.7              | 2.4                   | 3.7                  | 4.3                          |
| ♀  |                   |                       |                      |                              |
| Los Angeles County, Cal. <i>Allotype</i> . | 21.               | 3.                    | 4.                   | 4.8                          |
| Los Angeles County, Cal. <i>Paratype</i>   | 20.               | 2.7                   | 3.9                  | 4.8                          |

From the available data the distribution of the present species would appear to cover the mountains in the Los Angeles region, extending down their eastern slopes into decided desert conditions, as is shown by material taken at Palm Springs, in the Mojave Desert at the foot of the San Jacinto Range.

*Specimens Examined*: 9; 3 males, 2 females and 4 immature individuals.

CALIFORNIA. Los Angeles County, 1 ♂, *type*, [Hebard Cln.]; June, (D. W. Coquillett), 1 ♂, 2 ♀, 1 juv. ♀ *allotype* and *paratypes*, [U. S. N. M. and Hebard Cln.]. Mount Wilson, near summit, June 6, 1916, (H.

<sup>8</sup>In *californicum* the subgenital plate is weakly scoop-shaped, with apex broadly and weakly convex.

<sup>9</sup>In *californicum* the penultimate tergite is moderately angulate-emarginate, so that a larger portion of the very small trigonal supra-anal plate is exposed.

Morrison; swept from *Ceanothus*), 1 ♂, [U. S. N. M.]. Keen Camp, San Jacinto Mountains, June 6 to 12, 1917, (E. P. Van Duzee), 1 juv. ♂, [Cal. Acad. Sci.]. Palm Springs, May 21, 1917, (E. P. Van Duzee), 2 juv. ♀, [Cal. Acad. Sci., and Hebard Cln.].

## Descriptions of New Species of Hesperidae (Lepidoptera).

By HENRY SKINNER, Philadelphia, Pa.

The types of the following species are in the collection of The Academy of Natural Sciences of Philadelphia.

### *Pyrrhopyge viriditas* n. sp.

Head, collar and palpi red. Thorax blue above, black below. Abdomen and legs black. Anal tuft orange. Wings dark green above and below. Fringes yellow; very narrow on the primaries and a little more than 1.5 mm. wide on the secondaries. Expanse (one wing) 27 mm.

One specimen from San Pedro, Sula, Honduras. This species belongs to the group containing *telassa* and *hadassa* Hew.

### *Mimoniades aemulus* n. sp.

Head, palpi, thorax and abdomen black. Patagia slightly tipped with orange. Primaries marked as in *pityusa* Hew. except that the two vitreous spots in the centre of the wing are differently shaped, the upper spot being elongate and the lower one has an indentation on the outer side. Inferiors as in *pityusa*. Underside as in *pityusa* except that the primaries have no markings other than the vitreous spots, and on the secondaries the narrow submarginal line is wanting. Expanse of one wing 31 mm.

One male specimen from Ambato, Ecuador. This species differs from its allies in the black body and abdomen and also in the character of the central vitreous spots.

### *Mimoniades amans* n. sp.

Head, palpi, thorax, abdomen and legs mostly black with a few whitish hairs interspersed here and there on the underside. A broad orange, vitreous band extending from the costa to the submedian nervure, which is 6 mm. in width; the remainder of the wing is immaculate and black. The secondaries are black with blue scales extending parallel to the margin and 4 mm. from it, and also a faint line of these blue scales running the same distance from the interior margin. In the medial part of the wing